DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 13.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-012858
Date Inspected: 26-Mar-2010

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Oregon Iron Works Clackamas, Or.

OSM Arrival Time: 1000
OSM Departure Time: 1830
Location: Clackamas, OR

CWI Name:	M. Gregson, J. Salazar			**CWI Present:**	☑ Yes	☐ No	
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☐ Yes	☐ No	☑ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: Hinge K Pipe Beams

Summary of Items Observed:

The Quality Assurance Inspector Sean Vance arrived on site at Oregon Iron Works, Inc (OIW) in Clackamas, OR, to randomly observe the in process welding of the Hinge K Pipe Beam assemblies. The QA Inspector arrived on site to randomly observe the OIW Quality Control (QC) Inspectors in process and completed visual and nondestructive testing. Upon the arrival of the QA Inspector the following observations were made:

Hinge-K Pipe Beam Assembly 101A-1:
The QA Inspector witnessed WID #B62 perform grinding activities, utilizing a mechanical grinder, on the inside of this assembly 101A-1. The QA Inspector spoke with Lead QC Inspector Mike Gregson and he explained that WID #B62 was currently grinding on the weld joint #WM4-1, Fuse 120A-1 to Forging 102A-1, which was previously marked by QC Inspector Jose' Salazar, for excessive reinforcement. The QA Inspector noted that per AWS D1.5, up to 3mm reinforcement is acceptable.

Hinge-K Pipe Beam Assembly 102A-2:
The QA Inspector witnessed WID #B62 (Marcus Belgarde), performing the submerged arc welding (SAW) on the a109 Post Tension Cap plate to b106 HPS 485W stiffener. The QA Inspector noted that this weld joint was designated as a partial joint penetration (AWS D1.5 TC-P4-S), weld joint (WJ) #W2-18 and WID #B62 was performing the SAW in the flat (1G) position. The QA Inspector noted that the SAW fill passes were currently in-process and noted that the OIW approved welding procedure specification (WPS 4020), was being utilized. The QA Inspector noted that QC Inspector Jose´ Salazar, was present and QC Inspector Salazar explained that the in-process welding parameters/pre-heat temperatures, were intermittently verified. QC Inspector Salazar explained that the average welding parameters for the SAW fill passes, currently in process, were recorded at 580 amps/32.6

volts, with a pre-heat of approximately 350 degrees Fahrenheit (177 C) and travel speed of 508 mm/min. The QA Inspector randomly verified pre-heat of approximately 350 degrees Fahrenheit (177 C) and welding parameters to be in compliance with the applicable WPS 4020. The QA Inspector noted that the SAW appeared to be in compliance with AWS D1.5 and the applicable WPS.

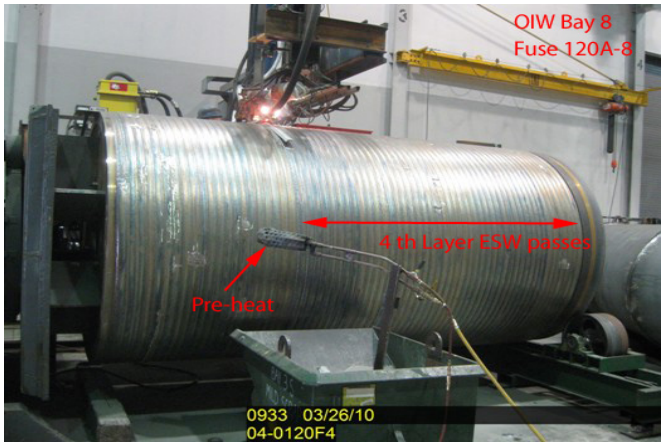
Hinge-K Pipe Beam Assembly 102A-3:
The QA Inspector witness an OIW Machinist continuing to machine the completed HPS 485W, mill-to-bear stiffeners.

Hinge-K Pipe Beam Assembly 120A-8:
The QA Inspector witnessed welder WID #F17 (Igor Frolov), performing electro slag welding (ESW) on the fourth layer welding passes, in the flat position. The QA Inspector noted that the fourth layer pass was now approximately 75% complete and Soudokay brand Soudotape 316L stainless steel consumable strip, was being utilized. The QA Inspector randomly noticed QC Inspector Jose' Salazar was present, to verify in-process welding parameters (amps/volts) and monitor in-process continuous pre-heat temperatures. QC Inspector Salazar explained to the QA Inspector that welding amperage was previously recorded at 1250 amps/25.7 volts, travel speed at 267 mm/min. and a pre-heat temperature recorded at approximately 150 degrees Fahrenheit (66 C). The QA Inspector verified the welding parameters and the minimum pre-heat temperatures were in compliance with the applicable WPS 7003. The QA Inspector verified WID #F17 was currently qualified for this welding process and position and that the ESW being performed, appeared to be in compliance with WPS 7003. see attached picture below.

Material, Equipment, and Labor Tracking (MELT)
QA Inspector Sean Vance performed a verification of material, personnel and equipment involved with the project. The QA Inspector observed at Oregon Iron Works: 4 OIW production personnel and 2 QC Inspectors on day shift- 2 OIW production and 1 QC on swing shift .
The QA Inspector noted that the following personell were present at AG Machine shop:1 Machinist and 1 Machinist supervisor.

Summary of Conversations:
Lead QA Inspector Joe Adame explained to the QA Inspector that he had spoken with Robert Mertz, regarding the discrepancies between the QA Inspectors and OIW, on the definition of the weld "Root Face", for Ultrasonic Testing (UT) purposes. The QA Inspector noted that this discrepancy was regarding the UT on the Complete Joint Penetration (CJP) weld joint # WM4-1, Fuse 120A-1 to Forging 102A-1 (AWS D1.5 B-U7-S). Lead QC Inspector Mike Gregson had previously notified the QA Inspectors that the "Root Face" will be defined as the depth of the backgouge, for UT testing purpose. QC Inspector Gregson explained that this was the depth verified by OIW QC Inspector Jose' Salazar, approximately 65 mm -71 mm deep and that the joint configuration is for "tooling" purposes, only. The QA Inspector noted that this joint configuration has two overlapping root faces, 10 mm each wide, for ease of fit-up, of the weld joint. The QA Inspector noted that these two root faces had been previously removed during the backgouging, performed by OIW.
QA Inspector Adame explained to the QA Inspector that per Robert Mertz, the "Root Face" is defined as 20 mm, 10 mm for each side and that if OIW has backgouged correctly, there should not be any issues. QA Inspector Adame explained that per Robert Mertz, "The root face area is required to be evaluated using an indication rating of 4 db more sensitive, per AWS D1.5 3rd bullet point, Table 6.3". QA Inspector Adame explained that OIW Project Manager Bill Pender, has been informed of this. QA Inspector Adame explained to the QA Inspector that

Project Manager Bill Pender has currently instructed OIW QC personell, to perform the testing with the “Root Face” defined as the depth of the backgouge, plus 6 mm outward, per AWS D1.5 Fig. 2.4, B-U7-S. The QA Inspector noted that OIW will perform the testing with the root face at a depth of 65 mm- 71mm.



Summary of Conversations:

As noted above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

Inspected By:	Vance,Sean	Quality Assurance Inspector
Reviewed By:	Adame,Joe	QA Reviewer